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      (FILE 'HOME' ENTERED AT 09:34:27 ON 31 MAR 2005)

      FILE 'CAPLUS' ENTERED AT 09:34:44 ON 31 MAR 2005
                  E JOBLING STEPHEN/IN,AU
L1              33 S E2-9
                  E SCHWALL GERHARD/IN,AU
L2              14 S E2-7
                  E WESTCOTT ROGER/IN,AU
L3              12 S E5-7
L4              44 S L1 OR L2 OR L3
L5          146448 S STARCH
L6              14 S L4 AND L5
L7            4971 S FREEZE THAW
L8          340914 S VISCOSITY
L9           93533 S GELATIN?
L10          11059 S AMYLOSE
L11           5987 S AMYLOPECTIN
L12           1961 S SYNERESIS
L13             11 S L6 AND (L7 OR L8 OR L9 OR L10 OR L11 OR L12)
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L13 ANSWER 1 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:174207 CAPLUS
DOCUMENT NUMBER: 141:87959
TITLE: Improving **starch** for food and industrial applications
AUTHOR(S): **Jobling, Steve**
CORPORATE SOURCE: UK
SOURCE: Current Opinion in Plant Biology (2004), 7(2), 210-218
CODEN: COPBFZ; ISSN: 1369-5266
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review. Progress in understanding **starch** biosynthesis, and the isolation of many of the genes involved in this process, has enabled the genetic modification of crops in a rational manner to produce novel **starches** with improved functionality. For example, potato **starches** have been created that contain unprecedented levels of **amylose** and phosphate. **Amylose**-free short-chain **amylopectin starches** have also been developed; these **starches** have excellent **freeze-thaw** stability without the need for chemical modification. These developments highlight the potential to create even more modified **starches** in the future.
REFERENCE COUNT: 58 THERE ARE 58 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 2 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:366822 CAPLUS
DOCUMENT NUMBER: 137:62426
TITLE: The influence of **starch** swelling on the material properties of cooked potatoes
AUTHOR(S): Ormerod, A.; Ralfs, J.; **Jobling, S.**; Gidley, M.
CORPORATE SOURCE: Unilever R and D Colworth, Sharnbrook, MK44 1LQ, UK
SOURCE: Journal of Materials Science (2002), 37(8), 1667-1673
CODEN: JMTSAS; ISSN: 0022-2461
PUBLISHER: Kluwer Academic Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Cooked potatoes have a wide range of food applications, but the mechanism by which softening occurs on heating is not clearly understood. Heating potato parenchyma tissue results in two independent, concurrent events; weakening of the binding between cells and swelling of intra-cellular **starch**. Potato plants containing **starches** with a range of high **amylose** contents and reduced swelling properties were available. This provided the opportunity to sep. cooking effects of inter-cellular pectin from swelling of intra-cellular **starch**. Their individual contribution to the separation of cells and the softening of cooked potato tissue was established by studying the influence of heat on the material properties of a range of **starch**-modified potatoes. For all potato lines studied, the strength of the heated tissue decreased markedly following 30 min at 80° or 5 min at 100°. Microscopy of the line in which there was minimal **starch** swelling, indicated that the cells of the cooked tissue principally contained fluid, in contrast to the controls in which the cells were filled with swollen **starch** on cooking. Since all the lines followed the same trend with regard to the thermal weakening of the tissue, weakening of potato tissue on cooking is primarily controlled by thermal degradation of the middle lamella.
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 3 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:181102 CAPLUS
DOCUMENT NUMBER: 136:385090
TITLE: Production of a **freeze-thaw**-stable potato **starch** by antisense inhibition of 3 **starch** synthase genes
AUTHOR(S): **Jobling, Stephen A.**; **Westcott, Roger J.**; Tayal, Akash; Jeffcoat, Roger; **Schwall, Gerhard P.**
CORPORATE SOURCE: Colworth House, Unilever Research, Bedford, MK44 1LQ, UK
SOURCE: Nature Biotechnology (2002), 20(3), 295-299
CODEN: NABIF9; ISSN: 1087-0156
PUBLISHER: Nature America Inc.

DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review. The use of unmodified **starches** in frozen foods is severely limited by the undesirable textural changes that occur after freezing and thawing. Retrogradation of glucan chains leads to **syneresis**, a separation of the **starch** gel and water phases. Stabilization of glucan chains leads to **syneresis**, a separation of the **starch** gel and water phases. Stabilization of the **starch** structure is normally achieved by chemical modification to prevent these changes from occurring. We have now created a **freeze-thaw**-stable potato **starch** by alteration of **starch** composition and structure by genetic modification. An **amylose**-free **starch** with short-chain **amylopectin** was produced by simultaneous antisense downregulation of 3 **starch** synthase genes. This **starch** is extremely **freeze-thaw** stable and shows no **syneresis** even after 5 **freeze-thaw** cycles. The use of this **starch** has potential for environmental and consumer benefits because its production requires no chemical modification.
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 4 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:208404 CAPLUS
DOCUMENT NUMBER: 134:249650
TITLE: Transgenic potatoes with altered activity in two or more **starch**-modifying enzymes and **starch** with modified properties
INVENTOR(S): **Jobling, Stephen Alan; Schwall, Gerhard Peter; Westcott, Roger John**
PATENT ASSIGNEE(S): National Starch and Chemical Investment Holding Corporation, USA
SOURCE: PCT Int. Appl., 77 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001019975	A2	20010322	WO 2000-GB3522	20000913
WO 2001019975	A3	20010927		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2388364	AA	20010322	CA 2000-2388364	20000913
EP 1212440	A2	20020612	EP 2000-958901	20000913
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
JP 2003509047	T2	20030311	JP 2001-523747	20000913
PRIORITY APPLN. INFO.:			GB 1999-21830 A	19990915
			WO 2000-GB3522 W	20000913

AB Disclosed is potato **starch** which, when in native form extracted from a potato plant, exhibits **freeze/thaw** stability such that a 1 %w/v aqueous suspension of the **starch** has an absorbance at 700nm wavelength of less than 1.2 units following 4 **freeze/thaw** cycles of freezing at -70 >C overnight and thawing at room temperature for at least 2 h; together with a method of altering the **starch** content of a plant; and altered plants, especially altered plants which contain **freeze/thaw** stable **starch**. Further disclosed is waxy (i.e. low **amylose**) **starch** having reduced **gelatinization** onset and swelling temps. The **starch** is synthesized in transgenic potatoes with altered levels of three isoenzymes of **starch** synthase (granule-bound **starch** synthase I (GBSSI), and isoenzymes II and III). This can be achieved by lowering the levels of the enzymes using antisense DNA to block gene expression. Plants lacking all three activities were constructed by serial transformation with antisense DNAs for all three genes. **Amylose** content was most sensitive to levels of GBSSI.

Starch granule **amylose** content was lowered to 3-11% and the granules had an altered, cracked, morphol. These **starches** showed lowered initial swelling temps. and lower final **viscosities** .

L13 ANSWER 5 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:347082 CAPLUS
DOCUMENT NUMBER: 133:86722
TITLE: Production of very-high-**amylose** potato **starch** by inhibition of SBE A and B
AUTHOR(S): **Schwall, Gerhard P.**; Safford, Richard; **Westcott, Roger J.**; Jeffcoat, Roger; Tayal, Akash; Shi, Yong-Cheng; Gidley, Michael J.; **Jobling, Stephen A.**
CORPORATE SOURCE: Unilever Research Colworth, Sharnbrook, Bedford, MK44 1LQ, UK
SOURCE: Nature Biotechnology (2000), 18(5), 551-554
CODEN: NABIF9; ISSN: 1087-0156
PUBLISHER: Nature America Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB High-**amylose starch** is in great demand by the **starch** industry for its unique functional properties. However, very few high-**amylose** crop varieties are com. available. The generation of very-high-**amylose** potato **starch** was obtained by genetic modification. This was achieved by simultaneously inhibiting two isoforms of **starch** branching enzyme to below 1% of the wild-type activities. **Starch** granule morphol. and composition were noticeably altered. Normal, high-mol.-weight **amylopectin** was absent, whereas the **amylose** content was increased to levels comparable to the highest com. available maize **starches**. In addition, the phosphorus content of the **starch** was increased more than fivefold. This unique **starch**, with its high **amylose**, low **amylopectin**, and high phosphorus levels, offers novel properties for food and industrial applications.
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 6 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:811367 CAPLUS
DOCUMENT NUMBER: 132:31779
TITLE: Improvements in or relating to plants and plant **starch** products resulting from transformation with antisense **starch** synthase constructs
INVENTOR(S): Edwards, Elizabeth Anne; **Jobling, Stephen Alan**; Martin, Catherine Rosemary; **Schwall, Gerhard Peter**; Smith, Alison Mary; **Westcott, Roger John**
PATENT ASSIGNEE(S): National Starch and Chemical Investment Holding Corporation, USA
SOURCE: PCT Int. Appl., 50 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9966050	A1	19991223	WO 1999-GB1902	19990615
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2331300	AA	19991223	CA 1999-2331300	19990615
AU 9943802	A1	20000105	AU 1999-43802	19990615
AU 758890	B2	20030403		
EP 1092033	A1	20010418	EP 1999-926617	19990615
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002518015	T2	20020625	JP 2000-554859	19990615

US 6635756	B1	20031021	US 2001-719771	20010305
US 2004025204	A1	20040205	US 2003-632341	20030801
PRIORITY APPLN. INFO.:			EP 1998-304716	A 19980615
			WO 1999-GB1902	W 19990615
			US 2001-719771	A3 20010305

AB A method for modifying plants by manipulating the activity of a combination of plant enzymes having **starch** synthase activity, in particular **starch** synthase II (SSII) and **starch** synthase III (SSIII). Modified plants, their use as food products and **starch**, in particular obtained from a modified potato plant, having novel properties and uses thereof are also disclosed. **Starch** extracted from potato plants transformed by introduction of and SSII/SSIII combination operably linked in the antisense orientation to a suitable promoter, has a **viscosity** onset temperature as determined by viscoamylograph, which is significantly reduced compared to the effects predicted by reducing the 2 isoforms individually or in unmodified plants. The modified **starch** may have uses in food processing and other applications, such as in the paper, textiles, and adhesives industries (no data).

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 7 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:362442 CAPLUS
DOCUMENT NUMBER: 131:181600
TITLE: A minor form of **starch** branching enzyme in potato (Solanum tuberosum L.) tubers has a major effect on **starch** structure: cloning and characterisation of multiple forms of SBE A
AUTHOR(S): **Jobling, Stephen A.; Schwall, Gerhard P.; Westcott, Roger J.**; Sidebottom, Christopher M.; Debet, Martine; Gidley, Michael J.; Jeffcoat, Roger; Safford, Richard
CORPORATE SOURCE: Unilever Research, Bedford, MK44 1LQ, UK
SOURCE: Plant Journal (1999), 18(2), 163-171
CODEN: PLJUED; ISSN: 0960-7412
PUBLISHER: Blackwell Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Full length cDNAs encoding a second **starch** branching enzyme (SBE A) isoform have been isolated from potato tubers. The predicted protein has a mol. mass of 101 kDa including a transit peptide of 48 amino acids. Multiple forms of the SBE A gene exist which differ mainly in the length of a polyglutamic acid repeat at the C-terminus of the protein. Expression of the mature protein in Escherichia coli demonstrates that the gene encodes an active SBE. Northern anal. demonstrates that SBE A mRNA is expressed at very low levels in tubers but is the predominant isoform in leaves. This expression pattern was confirmed by Western anal. using isoform specific polyclonal antibodies raised against E. coli expressed SBE A. SBE A protein is found predominantly in the soluble phase of tuber exts., indicating a stromal location within the plastid. Transgenic potato plants expressing an antisense SBE A RNA were generated in which almost complete redns. in SBE A were observed SBE activity in the leaves of these plants was severely reduced, but tuber activity was largely unaffected. Even so, the composition and structure of tuber **starch** from these plants was greatly altered. The proportion of linear chains was not significantly increased but the average chain length of **amylopectin** was greater, resulting in an increase in apparent **amylose** content as judged by iodine binding. In addition, the **starch** had much higher levels of phosphorous.

REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 8 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:180580 CAPLUS
DOCUMENT NUMBER: 131:2771
TITLE: A combined reduction in activity of **starch** synthases II and III of potato has novel effects on the **starch** of tubers
AUTHOR(S): Edwards, Anne; Fulton, Daniel C.; Hylton, Christopher M.; **Jobling, Stephen A.**; Gidley, Michael; Rossner, Ute; Martin, Cathie; Smith, Alison M.
CORPORATE SOURCE: John Innes Centre, Norwich, NR4 7UH, UK
SOURCE: Plant Journal (1999), 17(3), 251-261
CODEN: PLJUED; ISSN: 0960-7412
PUBLISHER: Blackwell Science Ltd.

DOCUMENT TYPE: Journal
LANGUAGE: English
AB A chimeric antisense construct has been used to generate transgenic potatoes (Solanum tuberosum L.) in which activities of both of the main **starch** synthases responsible for **amylopectin** synthesis in the tuber (SSII and SSIII) are reduced. The properties of **starch** from tubers of these plants have been compared with those of **starches** from transgenic plants in which activity of either SSII or SSIII has been reduced. **Starches** from the three types of transgenic plant are qual. different from each other and from the **starch** of control plants with unaltered **starch** synthase activities, with respect to granule morphol., the branch lengths of **amylopectin**, and the **gelatinization** behavior analyzed by viscometry. The effects of reducing SSII and SSIII together cannot be predicted from consideration of the effects of reducing these two isoforms individually. These results indicate that different isoforms of **starch** synthase make distinct contributions to the synthesis of **amylopectin**, and that they act in a synergistic manner, rather than independently, during **amylopectin** synthesis.
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 9 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1998:508745 CAPLUS
DOCUMENT NUMBER: 129:214130
TITLE: Consequences of antisense RNA inhibition of **starch** branching enzyme activity on properties of potato **starch**
AUTHOR(S): Safford, Richard; **Jobling, Steve A.**; Sidebottom, Chris M.; **Westcott, Roger J.**; Cooke, David; Tober, Karen J.; Strongitharm, Barbara H.; Russell, Alison L.; Gidley, Michael J.
CORPORATE SOURCE: Biosciences Division, Unilever Research, Sharnbrook, MK 441LQ, UK
SOURCE: Carbohydrate Polymers (1998), 35(3-4), 155-168
CODEN: CAPOD8; ISSN: 0144-8617
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Antisense constructs containing cDNAs for potato **starch** branching enzyme (SBE) were introduced into potato (Solanum tuberosum L.). A population of transgenic plants were generated in which tuber SBE activity was reduced by between 5 and 98% of control values. No significant differences in **amylose** content or **amylopectin** branch length profiles of transgenic tuber **starches** were observed as a function of tuber SBE activity. **Starches** obtained from low SBE activity plants showed elevated phosphorus content. 31P-NMR anal. showed that this was due to proportionate increases in both 3- and 6-linked **starch** phosphates. A consistent alteration in **starch** **gelatinization** properties was only observed when the level of SBE activity was reduced to below .apprx.5% of that of control values. **Starches** from these low SBE activity plants showed increases of up to 5°C in d.s.c. peak temperature and **viscosity** onset temperature Studies on melting of crystallites obtained from linear (1 → 4)-α-D-glucan oligomers suggest that an average difference of double helix length of about one glucose residue might be sufficient to account for the observed differences in **gelatinization** properties. It is postulated that the modification of **gelatinization** properties at low SBE activities is due to a subtle alteration in **amylopectin** branch patterns resulting in small changes in double helix lengths within granules.
REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 10 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:12611 CAPLUS
DOCUMENT NUMBER: 126:44371
TITLE: A class A **starch** branching enzyme gene from potato and its use in altering the properties of plant **starches**
INVENTOR(S): Cooke, David; Debet, Martine; Gidley, Michael John; **Jobling, Stephen Alan**; Safford, Richard; Sidebottom, Christopher Michael; **Westcott, Roger John**
PATENT ASSIGNEE(S): National Starch and Chemical Investment Holding Corp., USA; Cooke, David; Debet, Martine; Gidley, Michael

John; Jobling, Stephen Alan; Safford, Richard; Sidebottom, Christopher Michael; Westcott, Roger John
SOURCE: PCT Int. Appl., 140 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9634968	A2	19961107	WO 1996-GB1075	19960503
WO 9634968	A3	19961205		
W: AU, BR, CA, JP, KR, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
CA 2217878	AA	19961107	CA 1996-2217878	19960503
CA 2416347	AA	19961107	CA 1996-2416347	19960503
AU 9655099	A1	19961121	AU 1996-55099	19960503
AU 706009	B2	19990603		
EP 826061	A2	19980304	EP 1996-912161	19960503
R: AT, BE, DE, DK, ES, FR, GB, GR, IT, NL, SE, PT, FI				
US 6825342	B1	20041130	US 1997-945722	19970918
US 2003166919	A1	20030904	US 2002-56454	20020124

PRIORITY APPLN. INFO.:

GB 1995-9229	A	19950505
GB 1996-7409	A	19960410
CA 1996-2217878	A3	19960503
WO 1996-GB1075	W	19960503
US 1997-945722	B3	19970918

AB A cDNA for a class A **starch** branching enzyme (SBE) of potato is cloned and characterized for expression in other plants to alter the properties of their **starches**. A cDNA was cloned by PCR using primers derived from conserved peptides of other SBEs. Potato plants transformed combinations of sense and antisense expression constructs for class A and B SBEs were pred. and the properties of their **starches** characterized. Plants carrying antisense DNA to class A and class B enzymes had **amylose** as the main constituent of their **starch**. The pasting onset temps. of their **starches** were increased by 25-30°. Data from other transformants indicated that most of the effects were due to inhibition of class A gene expression.

L13 ANSWER 11 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1993:558630 CAPLUS
DOCUMENT NUMBER: 119:158630
TITLE: The extraction of a glucomannan polysaccharide from konjac corms (elephant yam, Amorphophallus rivieri)
AUTHOR(S): Wootton, A. Nicola; Luker-Brown, Martin; **Westcott, Roger J.**; Cheetham, Peter S. J.
CORPORATE SOURCE: Colworth Lab., Unilever Res., Sharnbrook/Bedford, MK44 1LQ, UK
SOURCE: Journal of the Science of Food and Agriculture (1993), 61(4), 429-33
CODEN: JSFAAE; ISSN: 0022-5142
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A process for the micropropagation of A. rivieri (elephant yam or konjac) and for the extraction and purification of the glucomannan polysaccharide from fresh konjac plant corms was developed. This process involves extraction with 2-propanol, which has the addnl. benefit of extracting carotenoids as a potentially valuable side-product. **Starch** granules with an unusually high and homogeneous **gelatinization** temperature range are normally present in the corms, particularly immature ones, and this greatly reduces the strength of gels formed using the glucomannan. Therefore, the extraction process also involves the selective hydrolysis of **starch**, by α- and β-amylases that have been specially selected for an absence of contaminating β-mannanase or β-glucanase activity that would depolymerize the glucomannan and render it non-functional. Bacillus licheniformis α-amylase was preferred. Using this process pure glucomannan could be extracted which, when mixed with κ-carrageenan, forms a gel almost twice as strong as locust bean gum-κ-carrageenan gels of the same concentration